DEVCAN 4.0
Help Documentation

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Introduction to DEVCAN

About DEVCAN

DEVCAN calculates the probability of developing or dying of cancer using incidence data from Surveillance, Epidemiology, and End Results (SEER) Program conducted by the National Cancer Institute, mortality data from National Center for Health Statistics (NCHS), and population estimates from census data. DEVCAN was developed by Information Management Services, Inc. in consultation with the Applied Research Branch of the National Cancer Institute.

About the National Cancer Institute

One of the major roles of the National Cancer Institute, which commissioned DEVCAN, is to collect, analyze and disseminate data useful in the prevention, diagnosis, and treatment of cancer. In support of this mission, the National Cancer Institute collects information on cancer incidence and survival through the Surveillance, Epidemiology and End Results (SEER) program.

The SEER program is composed of a set of population-based cancer registries across the United States which collect cancer data on a routine basis. The cancer data collected is submitted to the National Cancer Institute semi-annually for analysis.

For more information about the SEER program, please refer to the SEER Web page:

http://www-seer.ims.nci.nih.gov

About SEER Cancer Data

The incidence data delivered with DEVCAN originates from the National Cancer Institute's Surveillance, Epidemiology and End Results (SEER) program. The SEER program is a collection of population-based cancer registries in the United States which collect and submit cancer incidence and follow up data to the National Cancer Institute.

About NCHS Mortality Data

The mortality data included with DEVCAN was collected by the National Center for Health Statistics. The U.S. Mortality database includes all 50 states and the District of Columbia. The SEER Incidence and Mortality database includes only mortality data from the SEER areas to allow comparisons of risk of death estimates with the risk of diagnosis estimates.

What You Will Need

To use DEVCAN, you will need:

- 486- or Pentium-based personal computer (Pentium recommended)
- Microsoft Windows 95/NT
- 16 MB application RAM
- 2 MB hard disk space

DEVCAN Overview

Based on the chosen values of key database variables (like race and sex), DEVCAN takes cross-sectional counts of incident cases and mortality counts for the same areas by five-year age groups and uses them to calculate incidence and mortality rates using population estimates from census data for these areas. These rates are converted to probabilities using an exponential model and the probabilities are then applied to a hypothetical population of ten million live births.

For each five-year time interval this system estimates the number in this population dying of other causes, the number of new cases, and the number alive and cancer free at the beginning of the interval, as well as the lifetime probability of developing cancer. Reports showing these results are displayed on the main screen and may be printed or copied to other applications.

Please note that when the program refers to cancer or incidence, it is referring to only the cancer site that you requested.

Getting Help

Help System

DEVCAN provides explicit help relating to all system options. The help system defines in detail how to create a database to your specifications. There are four ways to access the help system from DEVCAN:

- Click the Help button on the toolbar.
- Choose **Contents** from the **Help** menu.
- Press **F1** on the keyboard for context-sensitive help.

Contents Tab

On the **Contents Tab**, a list of topics bulleted by book icons act as the table of contents for the help document. When a book icon is double-clicked, the book opens to reveal the subtopics marked with more book icons or page icons. The book icons indicate the chapter and section headings while the page icons lead to the information. When a page icon is double-clicked, the associated help screen appears.

Index Tab

To use the **Index Tab** enter the first few letters of a word you want to look up. If some topics appear, click on the topic you want from the index list. Then click **Display** to read about your topic. The **Index Tab** displays only indexed topics. If you cannot find your topic in the index, you should try the **Find Tab**.

Find Tab

To use the **Find Tab** enter the first few letters of a word you want to look up. In this case, the help system is looking for the word in the text of the help file just like a concordance. Click on a word or phrase that applies to your topic. Then, click on a help topic from the second list. Finally, click **Display** to read about your topic.

Technical Support

For technical support beyond the help system, please send e-mail to IMS at:

devcan@ssims.nci.nih.gov

Setting Up Sessions

Beginning a New Session

Beginning a new session will clear the output from the current session and clear all value choices for the variables in the Parameters box. To begin a new session, you may do either of the following.

- Click on the “New Session” button and click OK on the warning window.
- Choose Select Database from the Data menu, click on a database name on the Select Database Window and click OK.

Selecting a Database

To select a particular database, follow these steps.

1. Choose Select Database from the Data menu. This brings up the Select Database Window.
2. Choose one of the databases by clicking on its name.
3. Click OK to begin a new session with this database. If you click on Cancel the current session is restored.
4. A new session will be prepared with the name of the chosen database displayed in the main window title bar across the top.

Select Database Window

The Select Database Window appears when Select Database is chosen from the Data menu. It is a list of all database available to DEVCAN. To select a database, click on the database name and click OK. For detailed instructions, see Selecting a Database.

Choosing Values

Setting up a session for execution requires that all variables in the Parameters box have values assigned to them. Until every variable has been assign at least one value for the session, the Execute button on the toolbar will be disabled. To select values for a variable in the Parameters box, follow these steps.

1. Click on the variable name in the Parameters box.
2. A list of possible values for the variable will appear in the Items Selected box.
3. Select one or more of the values listed in the Items Selected box. For instructions on selecting more than one value, see Selecting Multiple Variable Values.
4. The values selected will be listed next to the variable in the Parameters box.

To check the values selected for a variable, extend the Selected Value column or select the variable so that the Items Selected box will have the selected values highlighted.

Selecting Multiple Variable Values

To select more than one value for a variable, use any of the following methods.

Mouse Alone

1. Click and hold on the first value in a list of consecutive values you wish to choose.
2. Drag the mouse pointer to the end of the list, selecting every value between.
3. Release the mouse button to select the highlighted values.

Shift Key

1. While holding down the Shift key on your keyboard, click on the first value in a list of consecutive values you wish to choose.
2. Continue to hold down the Shift key and click on the last value in the list.
3. All values between the first values and last value will be selected.

Control Key

1. While holding down the Control key on your keyboard, click on a value you wish to select.
2. Continuing to hold down the Control key, you may select other values.
3. Only values that were actually clicked will be selelcted.

Value Selection Hint for Cancer Databases

For people using a SEER database or another cancer database, it is important to consider if a cancer site is sex specific to ensure the correct population subset is used in DEVCAN calculations. It may seem obvious to select Site = Prostate and Sex = Male rather than Sex = Both Sexes, but if you are looking at a number of cancer sites at the same time, you might fall into this trap.

If you generate the Age Conditional Developing Table for Both Sexes with Prostate cancer, the probability of developing prostate cancer will be calculated based on the entire population (both males and females). DEVCAN does not know that only males can get prostate cancer. Therefore the chance of developing prostate cancer will be about approximately half what would be expected, since half of the population (women) is guaranteed prostate cancer free. Though this Table isn't wrong, it doesn't reflect the standard way of reporting the probability of developing a sex specific cancer site only by members of the sex involved.

If you are looking at a number of cancer sites at the same time, here are two suggestions.

- Simply add the individual sexes to the values list for Sex for the sex specific sites.
- Make a second session for the sex specific cancer sites with only the individual sexes as values for Sex.

Creating Output Reports

Executing the Session

Once at least one value has been selected for every variable in the Parameters box, you are ready to execute the session. You may either click on the Execute button on the toolbar or choose Execute from the Session menu.

Note

One report will be produced for each combination of values. For example, suppose you choose two values for the first variable and three values for the second variable and one value for all other variables. In this instance, DEVCAN will produce 6 reports, i.e. 6 = 2 x 3 x 1 x 1 (for however many single value variables are available in the database you are using). No more than 500 reports can be created by DEVCAN. An error message will appear if you attempt to create more than the allowed number of reports.

Status - Generating Reports Window

While the session is executing, the **Status - Generating Reports Window** appears. One progress meter is provided to track the completion of the executable steps DEVCAN performs to create the reports. The progress meter indicates what percent of the entire process has been completed. It is easy to misinterpret the progress meter, for it is not based on time. Instead, the progress meter reports the percent of completed steps, not time passed. For example, if the progress meter indicates that 50% of the job steps have completed 10 seconds after you began generating the reports, this does not mean that there is only 10 seconds left in the job. Actually there could be either more or less time left. You cannot tell the time remaining with the progress meter.

Output Options

You have the option to display the Age Conditional Tables in four different ways listed under step 2. However, you may choose to print any or all of the possible Age Conditional Table displays. To change the current display option, follow these steps.

1. Click on the pull down list from the tool bar or select **Output Options** from the **Data** menu.
2. Select a display option.
    - Number out of a million people
    - Number out of a hundred thousand people
    - Number out of ten thousand people
    - 1 out of N people

Output Reports

DEVCAN generates 6 tables per report: Life Table for Developing Cancer, Life Table for Dying of Cancer, Age Conditional Table for Developing Cancer, Age Conditional Table for Dying of Cancer, Raw Data Table, and Intermediate Results Table. Cancer in each case refers to the cancer site listed in the title of the table. Each table has a tab associated with it on the DEVCAN main window. To see a report, simply click on the tab. Tables may be electronically copied for use in other applications or printed.

Select a Report to View

After a session has been executed to create the reports, the right hand list box changes from holding values to holding cohort reports. To select a particular report, just click on the report you want to display. The report you selected to display will also be the "Selected Cohort" on the Report Printing Options Window.

Life Tables

Life Table for Developing Cancer begins with a hypothetical cohort of 10,000,000 live births. At each five-year age-group, the number of people developing cancer, the number of people dying of other causes, the cumulative probability of developing cancer from birth, and the cumulative probability of dying cancer free from birth are calculated. Then at the next age-group, the number of the cohort which were alive and cancer free at the beginning of the age interval is listed.

Life Table for Dying of Cancer also begins with a hypothetical cohort of 10,000,000 live births. At each five-year age-group, the number of people dying of cancer, the number of people dying of other causes, the cumulative probability of dying of cancer from birth, and the cumulative probability of dying cancer free from birth are calculated. Then at the next age-group, the number of the cohort which were alive at the beginning of the age interval is listed.

Note

When a mortality database is chosen, only the Life Table for Dying of Cancer is produced.

Age Conditional Tables

In previous versions of DEVCAN, to create this Table would require 20 separate sessions, one for each age group. This version of DEVCAN delivers the age conditional probabilities for all age groups in a single table. To find the probability of an individual of a specified age being diagnosed with the specific cancer within a certain number of years, follow these steps to read the Age Conditional Table for Developing Cancer.

1. Find the individual's specified age in the column labeled Current Age.
2. Follow along the row of the specified age until you reach the column for the future age you in which are interested.
3. The number at the intersection of these two ages is the probability of developing cancer for an alive and cancer free individual of the first age by the second age.

Notes

If you are looking at the Age Conditional Table for Dying of Cancer, realize that the number at the intersection of two ages is the probability of an alive individual of the first age (no guarantee that they are cancer free) dying of cancer by the second age.

The probabilities can be displayed out of a million people, hundred thousand people, ten thousand people, or it can be displayed as 1 out of N people. See Output Options for instructions on changing the display of the numbers.

Raw Data Table

The Raw Data Table shows the basic information from the database on which the estimates are based. This table includes the number of cases, the population from the incidence file, the number of cancer deaths, the total number of deaths, and the population from the mortality file.

Intermediate Results Table

The Intermediate Results Table has the following columns. For more information about the calculations necessary to create this table, please choose **Methods** from the **Help** menu for documentation.

lx	=	number alive at the beginning of the interval (total population)
olx	=	number alive and cancer free at the beginning of the interval (cancer-free population)
gx	=	incidence probability for the total population
ogx	=	incidence probability for the cancer-free population
rx	=	incidence rate for the total population
orx	=	incidence rate for the cancer-free population
mx	=	mortality rate from all causes of death
qx	=	probability of dying from all causes of death
omx	=	mortality rate from non-cancer causes
oqx	=	probability of dying from non-cancer causes
ax	=	number of new cancer cases

Because of the nature of the calculations, in a few cases lx will be smaller than olx. If this occurs a * will be placed in the table immediately after the age group for the interval in which it occurs.

Sharing Results

Copying Reports to the Windows Clipboard

You can copy any text from a table in a report to the Windows clipboard by selecting **Copy** from the **Edit** menu. This feature can be very helpful to quickly export DEVCAN results into other Windows applications, such as word processors and spreadsheets.

Printing Reports

Select **Print** from the **File** menu or click the Print button on the toolbar to print any or all of the report tables. When print is selected the Report Print Options Window appears.

Report Printing Options Window

On the Report Printing Options you may choose which tables you want printed. Each check box represents a table in a typical report. If your report does not contain a particular table, then the check box for that table is disabled. Notice that the Age Conditional Tables may be printed using any or all of the output options available for the display. When finished with this window, click Ok or Cancel.

Developing

The Developing section has check boxes for the Developing Cancer tables. These tables are created when incidence data is analyzed. The only exception is the Raw Data Table which is created for both incidence and mortality reports.

Mortality

The tables listed in the Mortality section are the Dying of Cancer tables. They are created in both incidence and mortality sessions.

Cohort Selection

You may either print the current report (Selected Cohort) or print all of the reports you created in this session (All Computed Cohorts). For example, suppose you ran a session that had multiple reports, say five. If you chose Selected Cohort and just the Life Table under Mortality, you would get one table. On the other hand, if you chose All Computed Cohorts and just the Life Table in the Mortality section, you would print five tables, one for each report or cohort.

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